

ABSTRACT OF THE DISCLOSURE

A method for patterning a magnetic memory cell junction is provided herein, which includes etching exposed portions of a stack of layers to a level spaced above a 5 tunneling barrier layer of the stack of layers. In addition, the method may include implanting dopants into exposed portions of the stack of layers. For example, the method may include oxidizing and/or nitriding the exposed portions of the stack of layers. In some embodiments, the steps of etching and implanting dopants may form an upper portion of the magnetic cell junction. Alternatively, the method may include alternating 10 the steps of etching and implanting dopants throughout the thickness of the exposed portions of the stack of layers. In either case, the stack of layers may include a magnetic layer which includes a material adapted to prevent the introduction of dopants underlying the tunneling barrier layer during the step of implanting.